

REMARKS

Introduction:

In accordance with the foregoing, claims 19 and 20 have been amended and claim 21 has been canceled. Claims 1-18, 22, 23 and 36-44 were previously withdrawn. No new matter is being presented. Therefore, claims 19-20 and 24-35 are pending and reconsideration is respectfully requested.

Rejections under 35 U.S.C. § 103(a):

On page 2 of the Office Action, claims 19-21 and 24-27 were rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over Hirano, et al. (U.S. Pat. No. 7,277,075, hereinafter “Hirano”) in view of Takayama (U.S. Pat. No. 6,317,157, hereinafter “Takayama”) in view of Miller, et al. (U.S. Pat. Appl. No. 2004/0113875, hereinafter “Miller”) and further in view of Kimura (U.S. Pat. No. 6,475,845, hereinafter “Kimura”). Applicants respectfully traverse for at least the following reasons.

Regarding the rejection of claim 19, it is noted that claim 19 has been amended to include the subject matter of claim 21 (now canceled) as well as the additional recitation of the predetermined value being “relative to the maximum gray scale level,” which finds support in the specification on page 4, lines 6-7; page 15, lines 15-20; page 16, lines 17-19; and page 20, lines 14-18.

Thus, independent claim 19, as amended, recites, *inter alia*:

“...a white extracting part is configured to determine which color data of the gamma-converted RGB data has a minimum value and to compare the minimum value with a predetermined value relative to the maximum gray scale level,

the white extracting part generates the minimum value of the gamma-converted RGB data as the white color component if the minimum value is smaller than the predetermined value, and

the white extracting part generates the predetermined value as the white color component if the minimum value is equal to or larger than the predetermined value.”

In view of these amendments, applicants submit that neither cited reference to Hirano, Takayama, Miller and/or Kimura, alone or in any combination thereof, teaches or suggests that the white extracting part compares the minimum value with a predetermined value relative to the maximum gray scale level and then generates the minimum value of the gamma-converted RGB

data and thereafter generates the minimum value of the gamma-converted RGB data as the white color component (when the minimum value is smaller than the predetermined value), or, alternatively, generates the predetermined value as the white color component (when the minimum value is equal to or larger than the predetermined value). Specifically, Applicants respectfully disagree with the Examiner's assertions, on page 8 of the Office Action, that Hirano, in particular, teaches the abovementioned limitations. Moreover, Applicants respectfully submit that none of the cited references teach the added limitation of the predetermined value being relative to, e.g., based on, a maximum gray scale level.

More particularly, the fundamental function of the white extracting part of the present invention is different from the allegedly analogous white extracting part of Hirano. Specifically, in the device of Hirano, a value of white luminance W_o is determined based only on comparing a minimum luminance (Y_{min}) of the R, G and B luminances and a maximum luminance (Y_{max}) thereof to effectively "scale" the three R, G and B luminances. Thus, a constant ratio (of input and output data) is maintained for each of the R, G and B signals. See, e.g., column 5, lines 32-60 and FIGS. 4a-4c of Hirano. To this end, the value of W_o is determined by an equation based only on Y_{min} and Y_{max} . Put another way, the value of W_o in Hirano is affected only by the values of Y_{min} and Y_{max} , which are related to initial R, G and B signal data each time the R, G and B signal data is input.

In contrast and in accordance with the present invention as disclosed in amended independent claim 19, however, the value $W\gamma'$ of the present invention (allegedly analogous to W_o of Hirano) is either a minimum of the three R, G and B signals ($\text{Min}[R\gamma, G\gamma, B\gamma]$) or a value ($aG_{max\gamma}$) based on a maximum gray scale value (G_{max}) thereof, depending upon a relationship of the predetermined value with respect to $aG_{max\gamma}$. Further, $\text{Min}[R\gamma, G\gamma, B\gamma]$ is varied in accordance with a real-time variation of RGB data, while the maximum grayscale value G_{max} is fixed, based on characteristics of the display panel, i.e., does not vary. Further, $aG_{max\gamma}$ is thereby not related to the variation of RGB data for which $\text{Min}[R\gamma, G\gamma, B\gamma]$ is determined.

Simply stated, the value of $W\gamma'$ in the present invention is either $\text{Min}[R\gamma, G\gamma, B\gamma]$ or $aG_{max\gamma}$, not either $\text{Min}[R\gamma, G\gamma, B\gamma]$ or $\text{Max}[R\gamma, G\gamma, B\gamma]$, as would be required to be more closely analogous to the device of Hirano.

This distinction between the present invention and Hirano is clearly illustrated by comparing FIGS. 4a-4c of Hirano with FIGS. 5A and 5B of the instant application. For example, referring to FIGS. 4a-4c of Hirano, the level W_o is determined, in the case shown in FIGS. 4a-4c, to be the minimum value (Y_{\min}) of the blue input luminance B_i (equal to 120). In contrast and in accordance with the present invention, two different values of $W\gamma'$ are shown in FIGS. 5A and 5B, based on whether the reference value is greater than or equal to $aG_{\max\gamma}$ (FIG. 5A, in which case $W\gamma'$ is set to $aG_{\max\gamma}$), or, alternatively, whether the reference value is less than $aG_{\max\gamma}$ (FIG. 5B, in which case $W\gamma'$ is set to $\min[R\gamma, G\gamma, B\gamma]$).

Thus, since Takayama, Miller and/or Kimura do not disclose the recitation “a white extracting part...configured to compare the minimum value with a predetermined value relative to the maximum gray scale level [and generate] the minimum value of the gamma-converted RGB data as the white color component if the minimum value is smaller than the predetermined value, [or, alternatively, generate] the predetermined value as the white color component if the minimum value is equal to or larger than the predetermined value” as disclosed in amended claim 19. Further, since the reference to Hirano fails to cure this deficiency of Takayama, Miller and/or Kimura, applicants respectfully assert that claim 19 is patentably distinguished over any combination of Takayama, Miller, Kimura and/or Hirano, and the rejection of claim 19 is therefore hereby overcome.

Regarding the rejections of claims 20 and 24-27, it is noted that these claims depend from claim 19 and that, therefore, the rejections of claims 20 and 24-27 are overcome for at least the reasons as set forth above.

In addition, claims 28-35 were rejected on page 11 of the Office Action as being allegedly unpatentable over Hirano in view of Takayama in view of Miller in view of Kimura and further in view of Eida, et al. (U.S. Pat. Appl. No. 2001/0050532, hereinafter “Eida”). However, applicants respectfully assert that, since the additional reference to Eida does not cure the defects of the Hirano, Takayama, Miller and Kimura references, as described above with reference to claim 19, and since claims 28-35 depend from claim 19, the rejections of these claims are overcome for at least the reasons set forth above.

Conclusion:

In accordance with the foregoing, applicants note that the application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested. The Office is invited to contact applicants' attorneys at the below-listed telephone number concerning this Amendment or otherwise regarding the instant application. If there are any charges with respect to this Amendment or otherwise, please charge them to Deposit Account no. 06-1130 maintained by applicants' attorneys.

Respectfully submitted,

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Date: August 21, 2008